

REMARKS

Rejection of claims 1-20 as being unpatentable under 35 U.S.C. §103(a) based on the combination of Celis and Selfridge

The Examiner rejected claims 1-20 as being unpatentable under 35 U.S.C. §103(a) based on the combination of Celis and Selfridge. Each of these claims is addressed below.

Claims 1, 5, 10 and 14

In the rejection of claims 1, 5, 10 and 14, the Examiner reads col. 10 lines 10-49 on the limitation “the execution plan comprising a plurality of execution plans” in these claims. The Examiner specifically recites “an Optimize Group task module . . . an Optimize Expression task module . . . a Create Plan task module . . .” on the plurality of execution plans in these claims. Applicants respectfully assert that these modules in Celis cited by the Examiner are not “execution plans” for an expression within the reasonable scope of that term as used in the claims. The term “execution plan” or “plan” is well-known in the art to refer to a plan that is used by the query optimizer when executing the query. The modules cited by the Examiner are not execution plans, but are software modules that make up the query optimizer 120. This is stated clearly at col. 10 lines 8-13, which states: “The primary memory of the database server 102 can contain the following: an operating system 118; a query optimization module or query optimizer 120 that contains data structures and *modules for generating a plan* that optimizes the input query. The query optimizer can contain the following: . . .” The text that follows in Celis lists the software modules that the Examiner cited in the rejection of claims 1, 5, 10 and 14.

The modules in Celis cited by the Examiner are software modules in the query optimizer 120 that generates an execution plan. This means that these software modules

are not, in and of themselves, execution plans. These software modules are executable software, but do not read on the execution plans expressly recited in the claims. For this reason applicants respectfully request reconsideration of the Examiner's rejection of claims 1, 5, 10 and 14.

The Examiner admits in the rejection that "Celis does not expressly teach generating from the expression a graph that includes at least one node and different portions of a graph and graph builder means." The Examiner the cites to Selfridge as allegedly teaching these limitations, and concludes it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Celis and Selfridge to arrive at the claimed invention. Applicants respectfully assert: 1) the combination of Celis and Selfridge do not teach all of the limitations in the claims; and 2) the Examiner's stated rationale for combining Celis and Selfridge is defective. Each of these contentions is addressed below.

Combination of Celis and Selfridge do not teach all of the limitations in the claims

Applicants respectfully assert that the combination of Celis and Selfridge do not teach the limitations in the claims. We consider claim 5, which reads:

. . . the database query optimizer comprising:
a graph builder that generates from the query a graph that includes at least one node; and
an execution plan generator that generates from the graph an execution plan for the query, the execution plan comprising a plurality of execution plans that correspond to different portions of the graph.

Selfridge teaches generating a graph that includes at least one node. However, the graph in Selfridge is not generated "from a query" as recited in claim 5. A query in Selfridge is one type of node in the graph. See FIG. 2, second row of the table that shows a "query

node” designated as 119. Referring now to FIG. 1, we see one query node 119 in the lower window 111. It could be said that Selfridge generates a node in a graph that corresponds to a query. However, it is incorrect to state that Selfridge “generates from the query a graph that includes at least one node” as recited in claim 5. This contention is further supported by considering that the execution plan generator in claim 5 “generates from the graph an execution plan for the query.” The Examiner cites to Celis as teaching an optimizer that generates an execution plan, and cites to Selfridge as teaching different portions of the graph. Note, however, that claim 5 expressly states “an execution plan generator that generates *from the graph* an execution plan for the query”. The execution plan in Celis is not generated from a graph. The graph in Selfridge does not reference execution plans. The graph in Selfridge is used as a data mining interface that allows a user to extract desired information from a database. Nowhere does Selfridge teach or suggest the generation of an execution plan *from the graph*. Because neither Celis, Selfridge nor their combination teach the generation of an execution plan from the graph as recited in the claims, claims 1, 5, 10 and 14 are allowable over the combination of Celis and Selfridge.

The Examiner’s stated rationale for combining Celis and Selfridge is defective

In the rejection, the Examiner states that it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the query optimization method of Celis with the query optimization method of Selfridge “because Selfridge’s query optimization method provides a graphical user interface . . . , further the graphical user interface permits the user to edit a graph . . .” First of all, Selfridge does not disclose a “query optimization method” as stated by the Examiner. Selfridge discloses a data mining interface. There is no query optimization in Selfridge. To establish a prima facie case of obviousness for these claims under 35 U.S.C. §103(a), the Examiner would have to state why one of ordinary skill in the art would be motivated to combine the graph in Selfridge into the system of Celis to result in graphically

representing queries and execution plans. The Examiner has made no such statement, and has therefore failed to establish a prima facie case of obviousness for claims 1, 5, 10 and 14 under 35 U.S.C. §103(a).

Celis generates execution plans in its own graphical way. Celis states: “The database query is represented as a query tree containing one or more expressions.” at col. 1 lines 66-67 and col. 4 lines 66-67. Celis is devoid of any teaching that the execution plan is generated from the graph. To state that it would be obvious to use the graphing interface of Selfridge with the system in Celis implies that it would be obvious to replace the native query tree in Celis with the graphing interface in Selfridge. This makes no sense. The graphing interface in Selfridge represents databases, tables, queries, etc. The graphing interface in Selfridge does not generate or display a query tree. Thus, we see that the graph in Selfridge is a different type of format than the graph in Celis. It would therefore not have been obvious to one of ordinary skill in the art to discard the query tree in Celis and replace it with the graphing interface of Selfridge.

To establish a prima facie case of obviousness, the Examiner would have to state why one of ordinary skill in the art at the time of the invention would be motivated to generate from the graph in Selfridge an execution plan for the expression as taught in Celis, and would further have to state the motivation for an execution plan in Celis to include a plurality of execution plans that correspond to different portions of the graph in Selfridge. The Examiner has made no such statement, and has therefore failed to establish a prima facie case of obviousness for claims 1, 5, 10 and 14 under 35 U.S.C. §103(a).

Because Celis does not generate an execution plan from a graph, and because Selfridge does not teach the generation of a graph that includes at least one node from an expression, and the generation from the graph an execution plan for the expression, where the execution plan comprises a plurality of execution plans that correspond to different

portions of the graph, claims 1, 5, 10 and 14 are allowable over the combination of Celis and Selfridge.

Claims 2, 6, 11 and 17

In rejection these claims, the Examiner states that Celis teaches the plurality of execution plans, and Selfridge teaches types of operations appended to corresponding nodes in the graph. Yet the Examiner provides no stated rationale for why it would have been obvious for one of ordinary skill in the art at the time the invention was made to combine the plurality of execution plans in Celis with the operations appended to the graph in Selfridge to arrive at the appending of execution plans to the graph as recited in these claims. Because the Examiner failed to state in the rejection a rationale for appending the execution plans in Celis to the nodes in the graph of Selfridge, the Examiner has failed to establish a prima facie case of obviousness for claims 2, 6, 11 and 17 under 35 U.S.C. §103(a).

In the rejection, the Examiner states: "Selfridge teaches types of operations appended to corresponding nodes in the graph (col. 4, lines 45-51, col. 6, lines 56-67)." The Examiner's assertion that Selfridge teaches appending types of operations to corresponding nodes in the graph is incorrect. Selfridge teaches encaching results of previous executions of sequences of operations. Selfridge does not teach that these encached results are appended to the nodes in the graph. Furthermore, even if Selfridge is properly read to append the encached results to nodes in the graph, the Examiner has not stated why it would have been obvious to one of ordinary skill in the art at the time of the invention to append the execution plans in Celis to different nodes in the graph of Selfridge. For this reason, the Examiner has failed to establish a prima facie case of obviousness for claims 2, 6, 11 and 17 under 35 U.S.C. §103(a).

Neither Celis, Selfridge nor their combination teach or suggest appending execution plans to nodes in a graph of an expression, where the execution plans were generated from the graph of the expression. For this reason, claims 2, 6, 11 and 17 are allowable over the combination of Celis and Selfridge.

Claims 3, 4, 7-9, 12, 13, 15, 16 and 18-20

Each of claims 3, 4, 7-9, 12, 13, 15, 16 and 18-20 depend on independent claims that are allowable for the reasons given above. As a result, claims 3, 4, 7-9, 12, 13, 15, 16 and 18-20 are all allowable as depending on allowable independent claims.

Conclusion

In summary, neither Celis nor Selfridge, either alone or in combination, teach, support, or suggest the unique combination of features in applicants' claims presently on file. Therefore, applicants respectfully assert that all of applicants' claims are allowable. Such allowance at an early date is respectfully requested. The Examiner is invited to telephone the undersigned if this would in any way advance the prosecution of this case.

Respectfully submitted,

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